Antenna Specification

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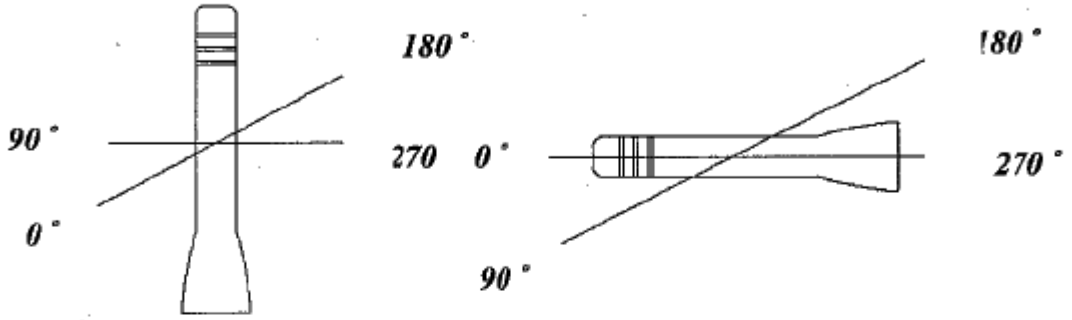

Frequency (MHz)	H - Plane	E - Plane
	MAX (dBi)	MAX (dBi)
2400	1.79	1.04
2450	2.48	1.57
2500	1.77	1.21

RF Exposure Calculations

From FCC 1.1310 table 1A, the maximum permissible RF exposure for an uncontrolled environment is $1mW/cm^2$. The Electric field generated for a $1mW/cm^2$ exposure (S) is calculated as follows:

$S = E^2 / Z$

Where:

S = Power density

E = Electric field

Z = Impedance.

$E = \sqrt{S \times Z}$

$1mW/cm^2 = 10\ W/m^2$

The impedance of free space is 337 ohms, where E and H fields are perpendicular.

Thus:

$E = \sqrt{10 \times 377} = 61.4$ V/m which is equivalent to $1mW/cm^2$

Using the relationship between Electric field E, Power in watts P, and distance in meters d, the corresponding

Antenna numeric gain G and the transmitter output power and solving for d,

$$d = \frac{\sqrt{P_{eak} \times 30 \times G}}{E}$$

The Numeric gain G of antenna with a gain specified in dB is determined by:

$G = Log^{-1}$ (dB gain/10)

$G = Log^{-1}$ (2.48.0/10) = 1.770

Notice in Installation Manual:

While installing and operating this transmitter and antenna combination the radio frequency exposure limit of 1mW/cm ^{2} may be exceeded at distances close to the antennas installed. Therefore, the user must maintain a minimum distance of 20cm from the antenna at all time.

The table in follow page identifies the distances where the 1mW/cm ^{2} exposure limits may be exceeded during continuous transmission using the antenna

Antenna Type	**Gain (dBi)**	**Gain Numeric**	**Peak Output Power (mW)**	**Calculated RF Exposure Separation Distance (cm)**	**Minimum RF Exposure Separation Distance (cm)**
Dipole	2.48	1.770	10.568	0.386	20

RF SAFETY MPE calculation for this Wall mounted Mobile device (at 20 cm)

According to **OET BULLETIN 56 Fourth Edition/August 1999**,

Equation for Predicting RF Fields:

$$S = \frac{PG}{4\pi R^2} \qquad S = \frac{10.568 \times 1.770}{4\pi (20)^2} = \mathbf{5.214 \times 10^{-3}\ mW/cm^2}$$

Where: S = power density (in appropriate units, e.g. mW/cm2)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)